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- **Ono, Toshihoko, Corning Incorporated
Corning, NY 14831 (US)**
- **Sasaki, Toshio, Corning Incorporated
Corning, NY 14831 (US)**
- **Takahashi, Hiroki, Corning Incorporated
Corning, NY 14831 (US)**
- **Takeuchi, Yoshiaki, Corning Incorporated
Corning, NY 14831 (US)**

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(71) Applicant: **CORNING INCORPORATED
Corning, N.Y. 14831 (US)**

(72) Inventors:
• **Hasui, Kenjiro, Corning Incorporated
Corning, NY 14831 (US)**

(74) Representative: **Boon, Graham Anthony et al
Elkington and Fife,
Prospect House,
8 Pembroke Road
Sevenoaks, Kent TN13 1XR (GB)**

(54) **Fiberoptic polarizer and method of making the same**

(57) A fiber-optic polarizer made by a process comprised of providing a substrate, coupling or embedding an optical single mode fiber to the substrate, making a narrow trench across the fiber at an angle, thereby bifurcating the fiber core into a first fiber core end and a second fiber core end, inserting and securing a thin polarizing material of a monolithic, non-laminated structure into the narrow trench, such that a light spot size emitted from a first fiber core is completely encompassed by the polarizing material, and the light spot size emerging from the polarizing material is substantially collected within the mode field diameter of a second fiber core. The narrow trench having a width of about 30-50 μm , and the polarizing material having a thickness of about 15-50 μm . The polarizing material having a monolithic composition. Moreover, the inventive polarizer has good reliability in terms of mechanical durability and weathering, since polarizer is fabricated on substrate in which optical path is entirely sealed. This is a process that eliminates the need to use specialized fibers or fibers that are specially treated such as those with thermally expanded cores (TEC). The process is also an alignment-free process that enables easier and faster mass-fabrication. This process produces multiple polarizers at a time.

FIG. 1A

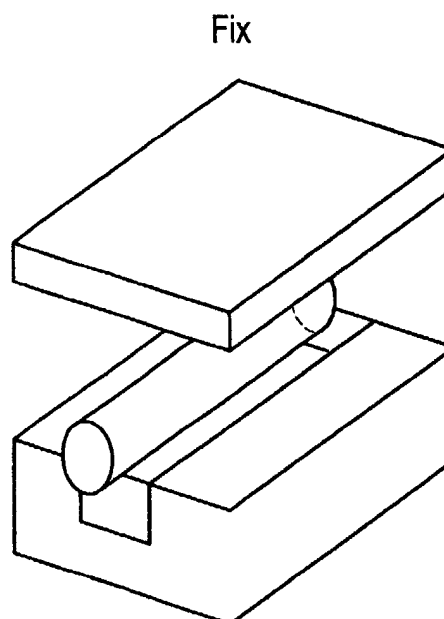


FIG. 1B

Dicing

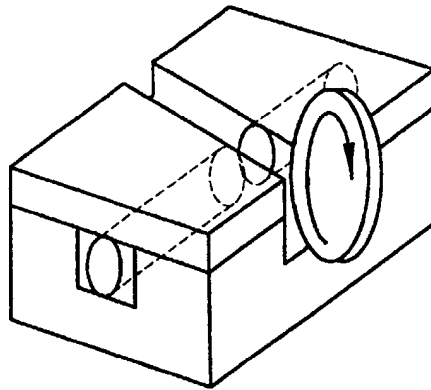
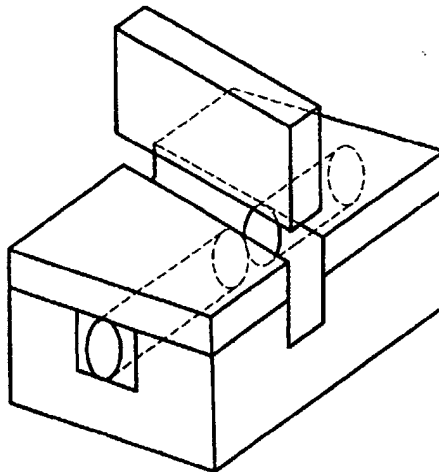


FIG. 1C

Insert





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 00 12 8594

| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|--|--|--|--|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int.Cl.7) |
| A | US 5 889 900 A (HALLEMEIER PETER F) 30 March 1999 (1999-03-30) * column 4 - column 6; figures 1,4-6 * | 1,21 | G02B6/12 G02B6/34 |
| A | INOUE Y ET AL: "POLARIZATION MODE CONVERTER WITH POLYIMIDE HALF WAVEPLATE IN SILICABASED PLANAR LIGHTWAVE CIRCUITS" IEEE PHOTONICS TECHNOLOGY LETTERS, IEEE INC. NEW YORK, US, vol. 6, no. 5, 1 May 1994 (1994-05-01), pages 626-628, XP000446978 ISSN: 1041-1135 * abstract; figure 1 * | 1,21 | |
| | | | TECHNICAL FIELDS SEARCHED (Int.Cl.7) |
| | | | G02B |
| The present search report has been drawn up for all claims | | | |
| Place of search THE HAGUE | | Date of completion of the search 20 August 2003 | Examiner Malic, K |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p> | | | |

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 12 8594

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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20-08-2003

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82